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National Field Research Center, Inc, Iowa City, IA

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NATIONAL
ENVIRONMENTAL/ENERGY
WORKFORCE ASSESSMENT
PHASE III

NOISE PROGRAMS

1979

Conducted by:
NATIONAL FIELD RESEARCH CENTER, INC.

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16. ABSTRACT

This directory, one of 18 volumes in Phase III of the National Environmental/Energy Workforce Assessment, provides information on post-secondary environmental education programs in the United States. Structured around information requests mailed to post-secondary education institutions, the directory provides the name and address of each institution listed, a contact person at each institution, the academic program title, and the degree offered at the institution (2-year, 4-year, etc.).

Phase III includes twelve such directories of post-secondary programs: One each for air, noise, pesticides & toxicology, potable water, wastewater, radiation, solid waste, and energy; one for combined water/wastewater programs; and a composite volume on each of the three areas of environmental engineering/technology, environmental science/health, and environmental studies. In addition, Phase III includes the following six volumes: Environmental Employment in Public Service Jobs Programs -- An Analysis of CETA Title VI FY 78 Projects; Salaries & Attendant Problems of Public Sector Environmental Employment; The Role of CETA in Direct Training and Employment; Private Sector Training Activities; Problems in Environmental Education & Training; and the Workforce Planning Bibliography.

Phase I of the Assessment evaluated workforce needs for pollution control and abatement in the U.S. during 1976-81. Phase II gathered data on training and educational programs in the post-secondary environmental education field as of 1978.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
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INTRODUCTORY NOTE

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The volumes of post-secondary environmental and energy programs were developed under the auspices and guidance of the U.S. Environmental Protection Agency, by the National Field Research Center, Inc. as part of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT, PHASE III. Sincere appreciation is extended to the many individuals and institutions who assisted in the identification and description of the programs, thus generously contributing to the success of this national project. Of particular importance are those individuals identified as contact persons in the program entries.

A special word of appreciation is extended to Mr. J. Donald Cook, Chief, Workforce Coordination Team, U.S. Environmental Protection Agency, Washington, D.C., and to the Manpower Officers and Workforce Coordinators from each of the U.S. Environmental Protection Agency Regional Offices.

PREFACE

This volume includes all identified post-secondary education and/or training programs which have been selected as pertinent to one media-specific area (i.e., air, wastewater, etc.). For ease of handling, the programs are presented in alphabetical order according to the name of the institution. The Appendix, however, presents a listing of the institutions by state, with reference to page numbers.

This portion of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT, Phase III, was conducted for the U.S. Environmental Protection Agency, by the National Field Research Center, Inc. with offices located in Iowa City, Iowa; Atlanta, Georgia; Denver, Colorado; and Washington, D.C.

FOREWORD

Information for this portion of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT, Phase III, was compiled through extensive review of catalogues from post-secondary education institutions listed in Post-Secondary Education, Education Directory, Colleges & Universities, 1976-77. All program entries were sent to the institutions for review and correction. In most cases, the program entries were returned after being reviewed. Those entries which were not returned have been indicated by an asterisk in front of the program title.

This twelve-volume report contains program entries from junior colleges, vocational/technical training institutes, community colleges, four-year colleges, and universities, as well as other training institutions. Programs are representative of all levels, from academic certification through doctoral degrees. The environmental pollution control areas of air, noise, pesticides, potable water, radiation, solid waste, wastewater and energy were surveyed. In addition, some programs which were not readily categorized

into media-specific areas (i.e., radiation, air, etc.) or which represented multiple media areas in curricula content, have been presented under the title of composite.

Readers are advised that material from the Acknowledgement through the Project Methodology is identical in all twelve program volumes. The reason for such duplication rests with the division of volumes into media specific areas, which increases probability that individuals will only read a given volume of special interest.

Readers are further advised that the purpose of these volumes is to point the direction for further information. Courses, programs and individuals are all subject to change over a given period of time. The inclusion of a specific program does not assure that the program is conducted every year nor does it assure that graduates meet specialized occupational requirements. Readers with specific questions should correspond directly with contact persons.

PROJECT BACKGROUND

The NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT, conducted by the National Field Research Center under the direction of the U.S. Environmental Protection Agency, is an effort to meet the national concern for the preservation and conservation of our country's resources. The project was developed as a multi-phase direct inquiry into the availability and readiness of our environmental workforce.

In keeping with the objective of the assessment, this national effort was directed at environmental/energy workforce requirements, national environmental education preparedness, and the functional relationship between the two.

Phase I of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT focused upon the development of "workforce demand projections" through 1982 for all public environmental agencies. This on-site assessment, which was carried out in all 50 states, Puerto Rico and the Virgin Islands, culminated in a numerical profile of the growth patterns and workforce needs at national and state levels. Stratification of the overall definition of "environmental occupation" into seven

distinct vocational areas enhanced even further the applicability of the results. In addition to this public sector workforce assessment, Phase I included an overview analysis of private sector needs and a brief review of selected environmental educational programs.

Phase II of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT was structured around an intensive on-site inventory of representative environmental educational offerings on a national scale. The primary objective of this portion of the project was to collect and aggregate data on training and educational programs in both the post-secondary education field and in the private sector and to do so by environmental area. Specifically, the study was designed to provide an overview of environmentally related post-secondary education programs, their program structures, representative course offerings, employment history of the graduates, and the faculty structures. Additionally, information was collected on program requirements and program projections regarding faculty and students.

Phase III of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT was completed in mid-1979. In an effort to draw together the relationship between Phase I and Phase II

of the project, several major areas were selected and monographs developed. In an effort to assist Federal and State planners, an environmental/energy manpower bibliography was developed and annotated. A final portion of the Phase III involved the identification of all environmental/energy post-secondary education programs as compared to the Phase I and Phase II which presented representative programs. This compendium of post-secondary environmental/energy programs was presented in media-specific volumes (i.e., Air, Potable Water, Solid Waste, etc.). While more extensive research may be advisable, it is anticipated that the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT in its entirety represents the most comprehensive research effort to date regarding environmental/energy workforce requirements and the educational community's ability to meet these needs.

PROJECT METHODOLOGY

The NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT, Phase III, includes several components, one of which is made up of the directories of post-secondary environmental/ energy programs. Utilizing the Post-Secondary Education, Education Directory, Colleges and Universities, 1976-77, requests were made of the 3,075 institutions and in addition any new institutions which could be identified. All environmental programs were categorized according to media areas, i.e., air, water, radiation, etc. The program entry information was sent to the contact person for corrections, deletions and general review. The contact persons were requested to return the reviewed information to project personnel. In the majority of cases, the information was returned by the institutions. Those program entries which were not returned have been indicated with an asterisk in front of the program title.

In total, 1,359 programs are presented in these volumes. All 50 states, the District of Columbia, Puerto Rico and the Virgin Islands are represented in the program entries. The introductions of each

volume present the details of selection criteria, geographic location, etc., of the programs presented in that specific environmental area.

The directories have been prepared by media specific area. The volumes which make up this portion of the project are:

* AIR
* NOISE
* PESTICIDES & TOXICOLOGY
* POTABLE WATER
* WASTEWATER
* WATER/WASTEWATER
* RADIATION
* SOLID WASTE
* ENERGY
* COMPOSITE: Environmental Engineering/Technology
* COMPOSITE: Environmental Science/Health
* COMPOSITE: Environmental Studies

INTRODUCTION

Noise is usually defined as unwanted sound. In contrast to air, water and land pollution, noise pollution is very subtle. Except in rare instances when loud noises shatter breakable objects, noise exposure usually leaves no visible evidence. Today, twenty million Americans have measurable noise-induced hearing losses, half of which are severe handicaps. Fifteen million more Americans are exposed to noise on the job which poses a threat to hearing. Finally, nearly fifteen million Americans are exposed to dangerous noise levels, though often unaware of it, from such sources as trucks, airplanes, motorcycles, hi-fi's, lawnmowers, and kitchen appliances.[1]

This directory expands upon the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT, Phase I and Phase II data of the noise control workforce and educational/training summary. For the purposes of this study, a "noise program" is not limited to those chiefly emphasizing environ-

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[1] U.S. Environmental Protection Agency, "Noise and Its Measurement" (February 1977).

mental noise control; such a program also includes related areas such as classical physical acoustics and audiology. The criterion for selection of an institution's program in the area of noise control was that the program offering must have included three or more noise courses from the same department. Four major categories were identified: (1) acoustics (i.e., psychological, aerodynamics, architectural and physical acoustics); (2) noise and its control; (3) measurement of sound/instrumentation; and, (4) hearing conservation. For this media area, the course descriptions were examined and reviewed with unusual thoroughness.

The 16 noise programs which are included in this volume are representative of 13 states. Ten programs are being conducted in eight northeastern states, and five programs are on-going in four southeastern states. The west and midwest are not well represented. Project researchers have indicated that efforts to locate noise programs in these areas were largely unsuccessful.

It is important to note that while this volume includes all identified noise "programs", there are environmental programs which include courses in

noise as well as air, water, etc. Program entries of this nature which are not identified as strictly noise programs will be found in the volumes of this study entitled:

* COMPOSITE: Environmental Engineering/Technology
* COMPOSITE: Environmental Science/Health
* COMPOSITE: Environmental Studies

The table below illustrates the number and variety of degree offerings presented in this volume.

TABLE I

NOISE PROGRAMS

Number and Types of Degree Offerings

Degree Level	No. of Degrees	% of Total
Certificate	1	6%
Certificate; 4-Year; Graduate	1	6%
Four-Year	1	6%
Four-Year; Graduate	2	13%
Graduate	11	69%
TOTAL	16	100%

All 16 programs represented in this volume are being conducted in four-year institutions which offer bachelor and graduate level degrees. It is also noteworthy that 62.5% were reviewed and returned by the represented institutions, to project researchers. The remaining 31% (differentiated by the presence of an asterisk in front of the program title) present the information as published by the institution's catalogues.

Despite the growing concern and efforts in controlling noise, the noise control field remains a very small portion of the environmental effort within the public sector. Data presented in the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT, Phase I, indicated that the noise control workforce within EPA was less than 1% of the total EPA workforce. Similarly, all state noise control staffs combined represented approximately 0.8% of the state level environmental/energy agency workforce. While data were more limited, Phase I also indicated that while the private sector workforce for noise control exceeds that of the public sector, the total effort is significantly outweighed by the activities in the control of other forms of pollution. While the importance of noise pollution control may be apparent, experts in the

field are hesitant to speculate on future growth in the areas of state and local manpower and education/training programs.

The following program entries are presented in alphabetical order according to institution name. For a listing of programs by state, the reader is referred to the Appendix.

PROGRAMS, ALPHABETIZED BY INSTITUTION

GEORGE WASHINGTON UNIVERSITY-NASA

Mail Stop 169
NASA- Langley Research Center
Hampton, Virginia 23665

Catalog Year
1977-78

contact person:
Dr. John E. Duberg, Director
Joint Institute for Advancement of Flight Sciences
(804) 827-2664

program title: **Acoustics**
department: **Joint Institute for Advancement of Flight Sciences**
degree: **Graduate**

GEORGIA INSTITUTE OF TECHNOLOGY

225 North Ave., N.W.
Atlanta, Georgia 30332

Catalog Year
1977-78

contact person:
Dr. Charles R. Vail, Associate Dean
College of Engineering
(404) 894-3354

program title: **Acoustical Engineering**
department: **College of Engineering**
degree: **Students receive this multidisciplinary certificate by completing courses in addition to the requirements for their respective engineering degrees.**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Department of Mechanical Engineering
MIT
Cambridge, Massachusetts 02139

Catalog Year
1977

contact person:
Dr. Richard H. Lyon, Professor
Mechanical Engineering
(617) 253-2214

program title: **Acoustics**
emphasis: **Noise Control; Architectural Acoustics; Sonar Applications**
department: **Interdepartmental**
degree: **Graduate**

MEMPHIS STATE UNIVERSITY

Speech and Hearing Center
807 Jefferson Ave.
Memphis, Tennessee 38152

Catalog Year
1977-78

contact person:
Dr. Daniel Orchik, Associate Professor
Audiology
(901) 525-2682

program title: **Audiology**
department: **Audiology and Speech Pathology**
degree: **Graduate**

comments: **Although the program concentrates on diagnostic and rehabilitative audiology, some courses do pertain to hearing conservation and industrial/environmental noise.**

NORTH CAROLINA STATE UNIVERSITY

Raleigh, North Carolina 27607

Catalog Year
1977-78

contact person:
Dr. Franklin D. Hart, Director
Center for Acoustical Studies
(919) 737-2373

program title: **Specialization in Acoustics, Noise and Vibration**
department: **Mechanical and Aerospace Engineering**
degree: **Graduate**

NORTHEASTERN UNIVERSITY

214 Hayden Hall
360 Huntington Ave.
Boston, Massachusetts 02115

Catalog Year
1973-74

contact person:
Dr. Arthur Foster, Professor & Chairperson
Mechanical Engineering
(617) 437-2711

*program title: **Mechanical Engineering**
emphases: **Energy, Noise**
department: **Mechanical Engineering**
degree: **Graduate**
comments: **Courses in: Shock; Vibration & Noise Control; Pollution Problems from Combustion Processes.**

NORTHERN ILLINOIS UNIVERSITY

DeKalb, Illinois 60115

Catalog Year
1976-77

contact person:
Dr. John C. Shaffer, Chairperson
Physics faculty
(815) 753-1000

program title: **Minor in Physics**
emphasis: **Acoustics**
department: **Physics Department**
degree: **Certificate**
4 year
Graduate

THE PENNSYLVANIA STATE UNIVERSITY

Applied Research Laboratory
P.O. Box 30
State College, Pennsylvania 16801

Catalog Year
1977-78

contact person:
Jiri Tichy, Chairperson
Committee on Acoustics
(814) 865-6364

program title: **Acoustics**
department: **Graduate Program in Acoustics**
degree: **Graduate**
comments: **More than 55 interdisciplinary courses offered in the following categories: General, Underwater, Environmental and Architectural Acoustics; Audio Engineering; Machine and Flow Noise; Speech and Hearing; and Vibration.**

PURDUE UNIVERSITY

West Lafayette, Indiana 47907

Catalog Year
1978

contact person:
Dr. Raymond Cohen, Director
Ray W. Herrick Laboratories
(317) 749-6430 or 6321

*program title: Acoustics & Noise Control
department: School of Mechanical Engineering
degree: Graduate
comments: Graduate research facility

RUTGERS– THE STATE UNIVERSITY OF NEW JERSEY

B241 Engineering Bldg.
Busch Campus
New Brunswick, New Jersey 08903

Catalog Year
1978-79

contact person:
Dr. S. Temkin, Director
Graduate Programs in Mechanical
& Aerospace Engineering
(201) 932-3652

program title: Mechanical & Aerospace Engineering
emphasis: Acoustics
department: Mechanical & Aerospace Engineering
degree: Graduate

UNIVERSITY OF CINCINNATI

College of Engineering
Cincinnati, Ohio 45267

Catalog Year
1976-77

contact person:
Dr. Ivan E. Morse
Mechanical & Industrial Engineering Department
(513) 475-2783

program title: Acoustics & Noise Control
department: Mechanical & Industrial Engineering
degree: 4 year
Graduate

UNIVERSITY OF HARTFORD

200 Bloomfield Avenue
West Hartford, Connecticut 06117

Catalog Year
1976-77

contact person:
Dr. T. Skipwith Lewis, Dean
College of Engineering
Associate Professor of Electrical Engineering
(203) 243-4841

program title: Acoustics
emphasis: Interdisciplinary Engineering Studies Program
department: Interdisciplinary
degree: 4 year

UNIVERSITY OF HOUSTON

4800 Calhoun
Houston, Texas 77004

Catalog Year:
1977-78

contact person:
Dr. R. D. Finch
Chairperson
(713) 749-1011

*program title: **Mechanical Engineering**
department: **Mechanical Engineering**
degree: **4 Year**
Graduate

comments: **At the graduate level an introductory course in nuclear engineering and noise related courses are offered.**

UNIVERSITY OF LOWELL

1 University Avenue
Lowell, Massachusetts 01854

Catalog Year:
1976-78

contact person:
Dr. Eugene E. Niemi, Jr.
Assistant Professor of Mechanical Engineering & Chairman of Department
(617) 454-7811

*program title: **Mechanical Engineering**
emphasis: **Acoustics, Energy Conversion**
department: **Mechanical Engineering**
degree: **Graduate**

UNIVERSITY OF MAINE

111 Barrows Hall
Orono, Maine 04473

Catalog Year:
1977-78

contact person:
Dr. Waldo M. Libbey
Professor of Electrical Engineering
(207) 581-7516

program title: **Acoustics**
emphasis: **Environmental Noise Control**
department: **Electrical Engineering**
degree: **Graduate**

UNIVERSITY OF TENNESSEE

Knoxville, Tennessee 37916

Catalog Year:
1976-77

contact person:
Dr. David Lipscomb, Director
Noise Research Laboratory
(615) 974-4123

program title: **Industrial Audiology**
department: **Audiology and Speech Pathology**
degree: **Graduate**

APPENDIX
Programs, Listed by State

STATE	INSTITUTION	PAGE
CONNECTICUT	University of Hartford	16
GEORGIA	Georgia Institute of Technology	11
ILLINOIS	Northern Illinois University	14
INDIANA	Purdue University	15
MASSACHUSETTS	Massachusetts Institute of Technology	12
	Northeastern University	13
	University of Lowell	17
MAINE	University of Maine	18
NEW JERSEY	Rutgers, The State University of New Jersey	15
NORTH CAROLINA	North Carolina State University	13
OHIO	University of Cincinnati	16
PENNSYLVANIA	The Pennsylvania State University	14
TENNESSEE	Memphis State University	12
	University of Tennessee	18
TEXAS	University of Houston	17
VIRGINIA	George Washington University - NASA	11